



GEIGER PLUS

Attention: This product is not designed to replace your home Carbon Monoxide detector. Other advisories also apply. Read and understand this entire document.

Thanks for purchasing GEIGER PLUS from Radiant Technology. This new product (2023) has significant new features:

- Calibration and LED display levels are engineered with FAA Carbon Monoxide monitoring recommendations in mind. (Search the web for “Carbon Monoxide, a Deadly Menace” – FAA)
- Differentiated, loud aural alarm for ~41 PPM and more insistent at 100 PPM
- Blue LED illuminates when Volatile Organic Compounds are detected

This product will help protect you. **Your responsibility is to understand how it works and how to interpret its results.** Please read this manual thoroughly before using GEIGER PLUS.

CHARGING. Please charge the battery before use. It will take about 45 minutes for a full charge on a standard USB port. If you are in a hurry, 30 minutes of charging will give you an 80% charge. When the AMBER light is bright, the device is charging. When it turns very dim, the device is fully charged. The amber light is immediately next to the USB port, on the side. The USB cable is not included. If you need a cable, send an email to info@radiantinstruments.com, and we will ship you one without charge. (US addresses only.) Always charge GEIGER PLUS before usage.

SENSOR used in GEIGER PLUS. GEIGER PLUS utilizes the MICS-5524 from SensorTech, which markets this product as a “general purpose CO / combustibile gas / VOC sensor.” SensorTech does not specify a lifetime for the sensor. They do advise that the internal heating resistor will age with usage, and the detection membrane will deteriorate in relation to the presence of air pollutants, which includes the target gases. The sensor can be destroyed by overloaded gases.

USER TEST. We recommend checking the response of your product using a match test before flight. Check our website for more information, where you will find a link to a video of how to do the match test.

CROSS SENSITIVITY. GEIGER PLUS, by design, is cross sensitive to gasoline and alcohol and to certain compounds containing hydrogen, such as natural gas. If your cockpit has alcohol or gasoline or other VOC contamination (aftershave, as an example), **resolve before flight.**

POWER ON. To power GEIGER PLUS on, touch the button *briefly*. The product will start an aural alarm and LED check sequence. The sensor will immediately begin to warm up. When ready, only one green LED will be illuminated. If two green LEDs are shining, GEIGER PLUS is still warming up. The aural alarm is inhibited when the sensor is warming up. **HOWEVER**, the aural sensor will become active no later than 3 minutes following Power On. If turned on while in contaminated air, GEIGER PLUS will show and alarm accordingly *after the 3-minute period.*

POWER OFF. To turn GEIGER PLUS off, *briefly* touch the power switch. When turned off, the unit is in standby mode, and will faintly blink a green LED. The battery must be recharged at some point; a green LED will continue to faintly blink for up to one year.

USAGE. Hang the unit in ambient air, not directly in an air stream. When turned on, and after the warm up period, the LED scale is as follows:

- LED1: GREEN – turned on, up to 20 PPM of CO.
- LED2: Yellow – 21 to 25 PPM of CO. **FAA says: Headaches; slight increase in respiration; drowsiness may develop.**
- LED3: Yellow – 26 to 30 PPM of CO. **FAA says: Headaches; slight increase in respiration; drowsiness may develop.**
- LED4: Yellow – 31 to 40 PPM detected. **FAA says: Headache, impaired judgment, shortness of breath, increasing drowsiness, blurring of vision.**
- LED5: Red – 41 to 50 PPM detected. **FAA says: Pounding headache, confusion, marked shortness of breath, marked drowsiness, increasing blurred vision.**
- LED6: Red – 51 to 86 PPM detected. **FAA says: Unconsciousness, eventual death if victim is not removed from source of CO.**
- LED7: Red – 87 to 112 PPM detected. **FAA says: Unconsciousness, eventual death if victim is not removed from source of CO.**
- LED8: Red – more than 112 PPM detected. **FAA says: Unconsciousness, eventual death if victim is not removed from source of CO.**
- LED9: Blue – illuminates when VOCs are present. May also indicate cross-contamination with CO sensing capabilities.

- LED10: Green – after Power On, blinks while the heater is warming up.

The above levels and guidance on CO poisoning are directly from published FAA advice: [Carbon Monoxide, a Deadly Menace \(from faa.gov\)](#)

AURAL ALARM. The aural alarm will sound at ~41 PPM and higher. The pattern of the alarm will become more insistent at 100 PPM. The alarm can not be muted, but the product may always be turned off by pressing the switch.

PILOT ACTIONS, when CO is suspected (sourced from published FAA advice):

- Turn the cabin heat fully off.
- Increase the rate of cabin fresh air ventilation to the maximum.
- Open windows if the flight profile and aircraft's operating manual permit such an action.
- If available (provided it does not represent a safety or fire hazard), consider using supplemental oxygen.
- Land as promptly as possible.
- Do not hesitate to let Air Traffic Control know of your concerns and ask for vectors to the nearest airport.
- Once on the ground, seek medical attention.
- Before continuing the flight, have the aircraft inspected by a certified mechanic.

BATTERY. The battery will last in standby mode for up to 12 months. When fully charged and powered up, the battery will last about 6 hours. Recharge GEIGER PLUS from any standard USB port using a standard micro-USB cable. You may also operate the unit while the battery is being recharged.

CALIBRATION. We cannot guarantee the absolute accuracy of GEIGER PLUS. We do provide the following advisory that each unit:

- Is calibrated to a zero point at the factory
- And is checked and calibrated against our lab reference for response at 100 PPM.
- We will recalibrate your unit for \$70 (2023). Check our website for details.
- We recommend annual recalibration.

- You may reset the Zero calibration point of the unit on demand. In clear calm outdoor air, turn the unit on. Wait more than 60 seconds, but less than three minutes. Then press the button down *continuously* for five seconds. Two red LEDs will illuminate. Release the button. For the next 90 seconds, LEDs will flash. Thereafter, the new zero point is overwritten into the calibration table of the unit.

ERRONEOUS INDICATIONS.

- **A rapid change in temperature** may cause an errant result, for instance, stepping out of a cool cockpit onto a hot ramp area.
- **A rapid change in air flow** may cause an errant result, for instance, moving the unit from ambient air into air vent flow.
- **A rapid change in humidity** may cause an errant result.
- **Exposure to strong VOCs may cause an erroneous indication of CO.**

WARRANTY:

Your new Radiant Technology product carries a one-year warranty, from the end user invoice date. Please contact support@radiantinstruments.com should your product need warranty service. There is an additional charge for international warranty service.

DISCLAIMER:

While Radiant Technology has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and reserves the right to change the specification of goods without notice. Radiant Technology accepts no liability for the correct, incorrect, or erroneous use of the device, including the failure of the device to perform as expected. **If you do not agree to these terms, please discontinue use of the product.**

RETURN / REFUND INFORMATION:

Must be returned in new, uninstalled, resalable condition within 14 days after receipt. Ship to Radiant Technology LLC, PO Box 20690, Wichita KS 67208.

Last edit: Jan 26 2023 by JPW